Disparities in Cardiovascular Care

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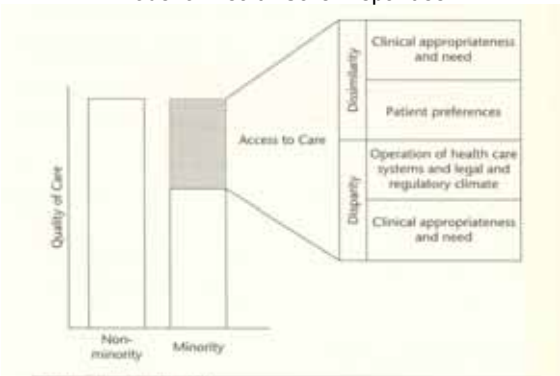
Creighton University School of Medicine
October 25, 2005

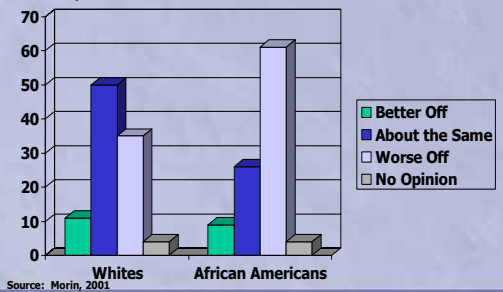
Creighton University Medical Center — THE CARDIAC CENTER

Model of Health Care Disparities



Source: Gomes and McGuire, 2001

Do you think the average African American is better off, worse off, or just about as well off as the average white person in terms of access to health care?



Source: Morin, 2001

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Racial and Ethnic Disparities in Care
The Perspectives of Cardiologists

Nicole Lurie, MD, MSPH; Allen Fremont, MD, PhD; Arvind K. Jain, MS; Stephanie L. Taylor, PhD; Rebecca McLaughlin, BA; Eric Peterson, MD, MPH; B. Waine Kong, PhD, JD; T. Bruce Ferguson, Jr, MD

Circulation 2005 111;1264-1269

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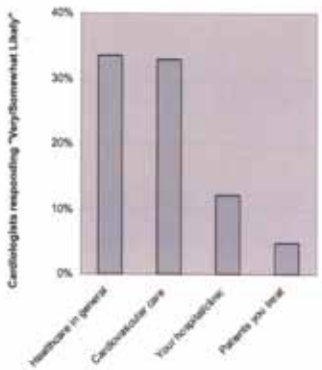
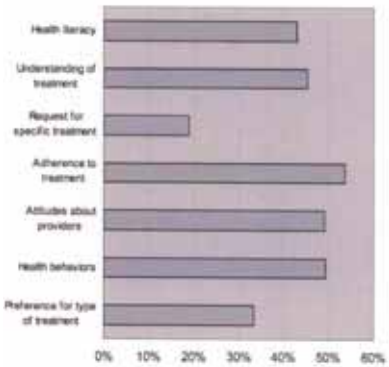
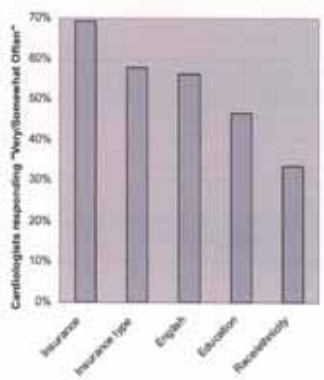


Circulation 2005 111;1264-1269

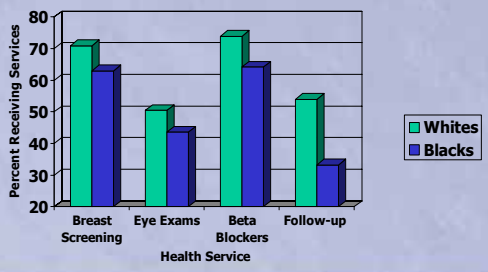


Circulation 2005 111;1264-1269

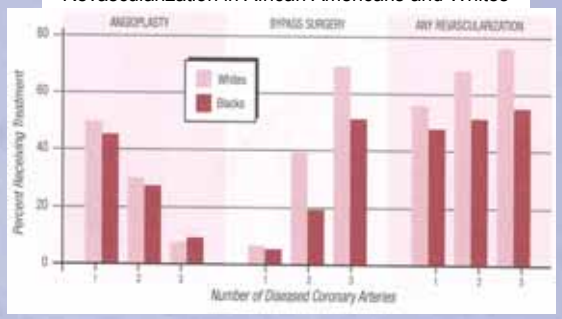


Circulation 2005 111;1264-1269

Among Medicare Beneficiaries Enrolled in Managed Care Plans, African Americans Receive Poorer Quality of Care (Schneider et al., *JAMA*, March 13, 2002)

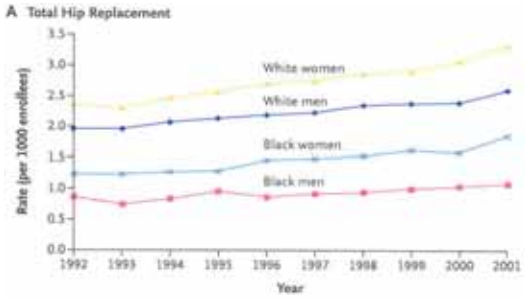


Revascularization in African Americans and Whites



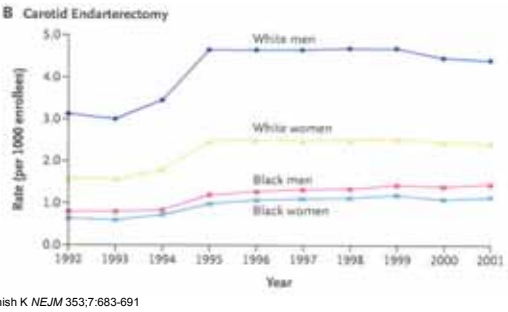
Association of Academic Health Centers Annual Meeting, October 6, 2003

Age-Adjusted National Rates of Total Hip Replacement per 1000 Persons Enrolled in Medicare, 1992-2001



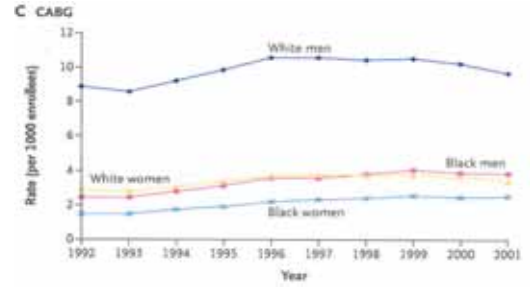
Ashish K *NEJM* 353;7:683-691

Age-Adjusted National Rates of Total Carotid Endarterectomy per 1000 Persons Enrolled in Medicare, 1992-2001



Ashish K *NEJM* 353;7:683-691

Age-Adjusted National Rates of Coronary Artery Bypass Grafting (CABG) per 1000 Persons Enrolled in Medicare, 1992-2001



Ashish K *NEJM* 353;7:683-691

THE NEW ENGLAND JOURNAL of MEDICINE

SPECIAL ARTICLE

Trends in the Quality of Care and Racial Disparities in Medicare Managed Care

Amal N. Trivedi, M.D., M.P.H., Alan M. Zaslavsky, Ph.D., Eric C. Schneider, M.D., M.Sc., and John Z. Ayanian, M.D., M.P.P.

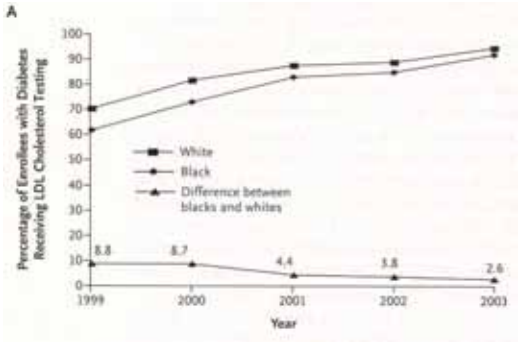
N ENGL J MED 353;7 WWW.NEJM.ORG AUGUST 18, 2005

Table 1. Description of HEDIS Measures of Quality of Care.*

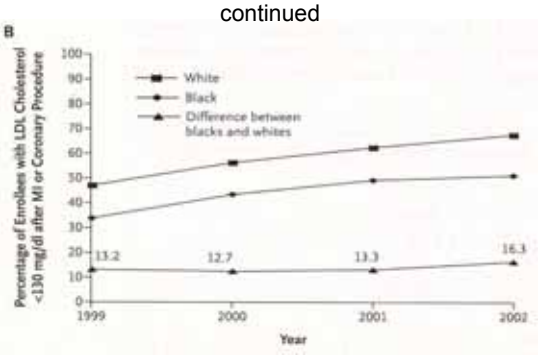
Measure	Description	Years
Breast-cancer screening		
Mammogram	Mammography within the past two years for women 42–69 yr	1997–2001
Diabetes care		
Eye examination	Retinal examination by an eye care professional within the past year	1999–2001
Testing of glycosylated hemoglobin level	Testing of glycosylated hemoglobin within past year	1999–2001
Control of glycosylated hemoglobin level	Levels of glycosylated hemoglobin below 9.5%	1999–2001†
Testing of LDL cholesterol level	Testing for LDL cholesterol within past year	1999–2001
Control of LDL cholesterol level	Level of LDL cholesterol below 130 mg/dl	1999–2001
Cardiovascular care		
Beta-blocker use	Receipt of a prescription for a beta blocker within seven days after discharge from hospital for treatment of acute myocardial infarction	1997–2001†
Testing of LDL cholesterol level	Testing of LDL cholesterol after discharge from hospital for treatment of acute myocardial infarction, coronary-artery bypass graft, or percutaneous transluminal coronary angioplasty	1998–2001
Control of LDL cholesterol level	Level of LDL below 130 mg/dl after discharge from hospital for treatment of acute myocardial infarction, coronary-artery bypass graft, or percutaneous transluminal coronary angioplasty	1999–2001†‡

Triverdi *NEJM* 353;7:6692-700

Trends in Receipt of Two HEDIS Measures for Enrollees in Medicare Managed-Care Plans, by Race



Trends in Receipt of Two HEDIS Measures for Enrollees in Medicare Managed-Care Plans, by Race continued



Racial Variations in Treatment and Outcomes of Black and White Patients With High-Risk Non–ST-Elevation Acute Coronary Syndromes

Insights From CRUSADE (Can Rapid Risk Stratification of Unstable Angina Patients Suppress Adverse Outcomes With Early Implementation of the ACC/AHA Guidelines?)

Ali F. Sonel, MD; Chester B. Good, MD, MPH; Jyotsna Mulgund, MS; Matthew T. Roe, MD, MHS; W. Brian Gibler, MD; Sidney C. Smith, Jr, MD; Mauricio G. Cohen, MD; Charles V. Pollack, Jr, MD, MA; E. Magnus Ohman, MD; Eric D. Peterson, MD, MPH; for the CRUSADE Investigators

Circulation 2005 111;1225-1232

Discharge Intervention	Overall (n=43 317)	White, % (n=37 813)	Black, % (n=5504)	Adjusted OR (95% CI)*
Medications				
Aspirin	89.5	89.7	87.7	0.996 (0.89, 1.11)
β-Blocker	82.8	83.0	81.2	1.05 (0.95, 1.16)
ACE inhibitor*	60.1	59.2	65.8	1.24 (1.14, 1.35)
Clopidogrel	52.2	53.7	41.6	0.76 (0.71, 0.82)
Any lipid-lowering agent†	78.4	78.9	74.6	0.81 (0.72, 0.90)
Statin†	74.4	74.9	70.9	0.83 (0.75, 0.92)
Recommendations				
Smoking cessation counseling‡	63.6	65.2	55.5	0.72 (0.63, 0.83)
Dietary modification counseling	70.6	70.4	71.6	0.94 (0.87, 1.02)
Cardiac rehabilitation referral§	40.9	41.8	33.9	0.92 (0.83, 1.01)

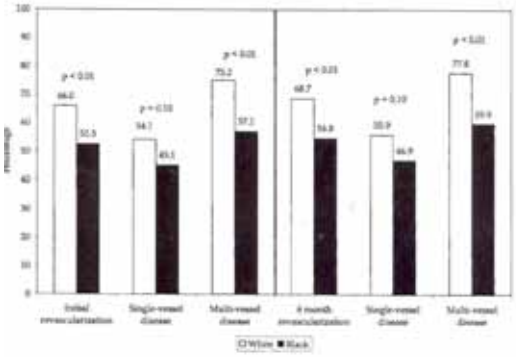
Circulation 2005 111;1225-1232

Interventional Cardiology

Influence of Racial Disparities in Procedure Use on Functional Status Outcomes Among Patients With Coronary Artery Disease

Padma Kaul, PhD; Barbara L. Lytle, MS; John A. Spertus, MD, MPH; Elizabeth R. DeLong, PhD; Eric D. Peterson, MD, MPH

Circulation 2005 111;121284-1290



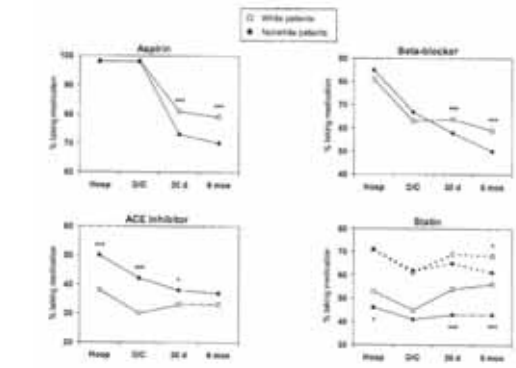
Circulation 2005 111;121284-1290

Coronary Heart Disease

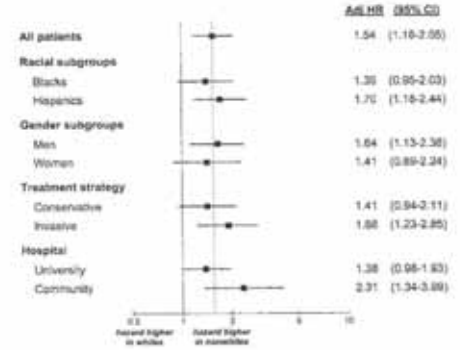
Influence of Race on Death and Ischemic Complications in Patients With Non–ST-Elevation Acute Coronary Syndromes Despite Modern, Protocol-Guided Treatment

Marc S. Sabatine, MD, MPH; Gavin J. Blake, MD, MPH; Mark H. Drazner, MD, MSc; David A. Morrow, MD, MPH; Benjamin M. Scirica, MD; Sabina A. Murphy, MPH; Carolyn H. McCabe, BS; William S. Weintraub, MD; C. Michael Gibson, MD, MS; Christopher P. Cannon, MD

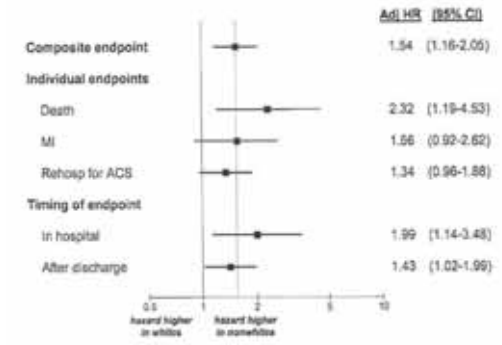
Circulation 2005 111;1217-1224



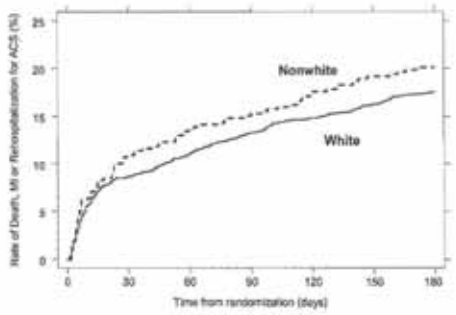
Circulation 2005 111;1217-1224



Circulation 2005 111;1217-1224

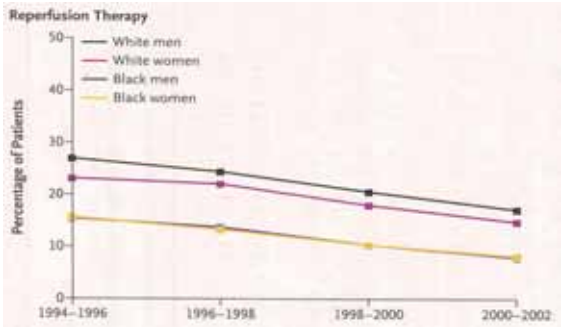


Circulation 2005 111;1217-1224

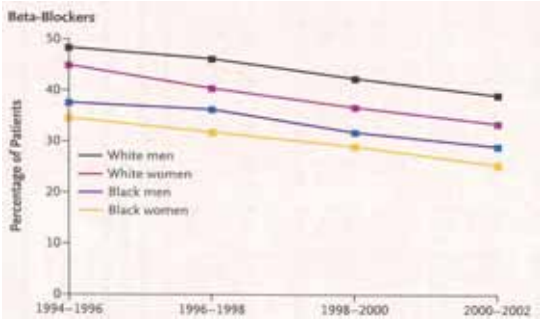


Circulation 2005 111;1217-1224

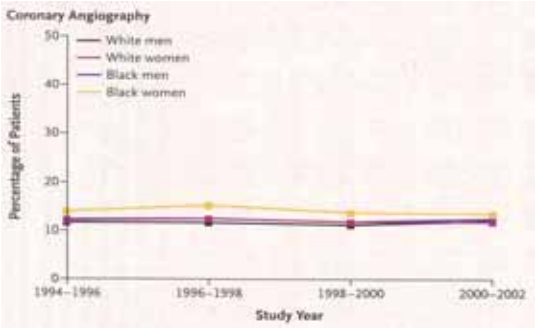
Proportions of Patients Considered Ideally Suited for Treatments and Procedures After MI, According to Sex and Race by Study Year

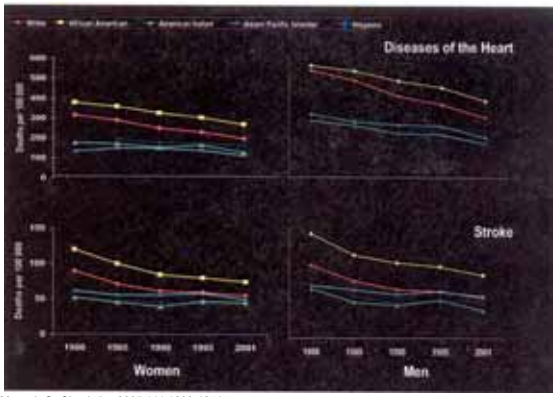


Proportions of Patients Considered Ideally Suited for Treatments and Procedures After MI, According to Sex and Race by Study Year, continued

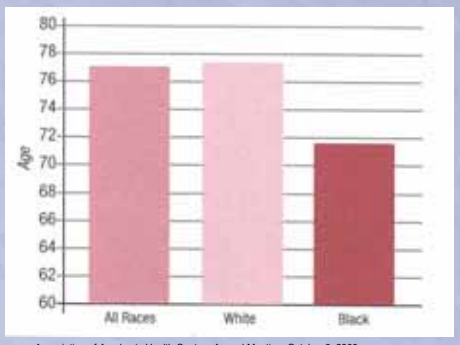


Proportions of Patients Considered Ideally Suited for Treatments and Procedures After MI, According to Sex and Race by Study Year, continued



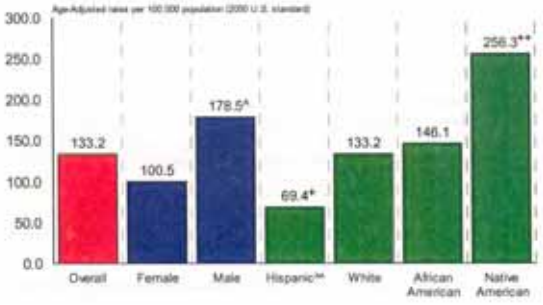


Mensah G, *Circulation* 2005 111;1233-1241

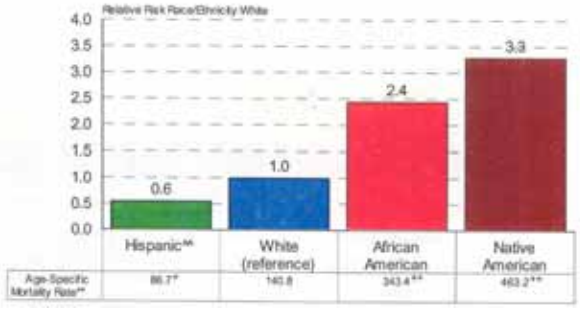


Association of Academic Health Centers Annual Meeting, October 6, 2003

Nebraska CHD Mortality 1999-2001



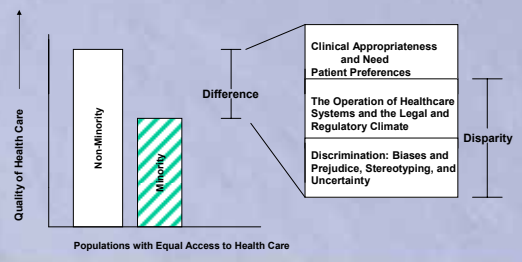
Relative Risk for Premature Heart Disease Mortality
Nebraska Adults 45-64 Race/Ethnicity 1999-2001



Nebraska Health and Human Services System. *Impact of Cardiovascular Disease in Nebraska*. Lincoln, NE: Nebraska Health and Human Services System, Department of Health and Human Services, Office of Disease Prevention and Health Promotion; 2004.

The average life expectancy for the state of Nebraska in the three-year period, 2000-2002 was 78.3 years for whites, 71.6 years for African Americans and 67.9 years for Native Americans

Figure 1: Differences, Disparities, and Discrimination: Populations with Equal Access to Health Care



Evidence of Racial and Ethnic Disparities in Healthcare

- Disparities consistently found across a wide range of disease areas and clinical services
- Disparities are found even when clinical factors, such as stage of disease presentation, co-morbidities, age, and severity of disease are taken into account
- Disparities are found across a range of clinical settings, including public and private hospitals, teaching and non-teaching hospitals, etc.
- Disparities in care are associated with higher mortality among minorities (e.g., Bach et al., 1999; Peterson et al., 1997; Bennett et al., 1995)

What Are Potential Sources of Disparities In Care?

- Health systems-level factors – financing, structure of care; cultural and linguistic barriers
- Patient-level factors – including patient preferences, refusal of treatment, poor adherence, biological differences
- Disparities arising from the clinical encounter

Caveats – *Unequal Treatment*

- Access (e.g., insurance status, ability to pay for healthcare) is *the* most important predictor of the quality of healthcare across racial and ethnic groups
- It is difficult – even artificial – to separate access-related factors from social categories such as race and ethnicity
- The bulk of research on healthcare disparities has focused on black-white differences – more research is needed to understand disparities among other racial and ethnic minority groups

What is the Evidence that Physician Biases and Stereotypes May Influence the Clinical Encounter?

- van Ryn and Burke (2000) - study conducted in actual clinical settings found that doctors are more likely to ascribe negative racial stereotypes to their minority patients. These stereotypes were ascribed to patients even when differences in minority and non-minority patients' education, income, and personality characteristics were considered.
- Finucane and Carrese (1990) - Physicians more likely to make negative comments when discussing minority patients' cases.

Infants' Mortality in the U.S. Rose in '02

The nation's infant mortality rate climbed from 6.8 deaths per 1,000 live births in 2001 to 7.0 deaths per 1,000 in 2002.

The U.S. numbers mirrored Nebraska's infant mortality rate for the same years. Measured over time, though, Nebraska babies fared worse than the rest of the nation. Nebraska ***traditionally*** has had one of the nation's worst mortality rates for African-American babies.

Omaha World Herald, Thursday, February 12, 2004

1% increase in racial disrespect was associated with an increase of 350.8/100,000 in all cause mortality among African Americans.

Kennedy B, *et al*, in (DIS) Respect and black mortality, Ethn Dis 1997;7:207-14

What Needs To Be Done

- Recognition
- Vigilance
- Monitoring
- Education of Providers

Racial and ethnic inequalities will not disappear without a commitment from the individuals who make treatment decisions and provide care.

Munsey S. Wheby, FACP

Knowing is not enough, we must apply
Willing is not enough, we must do

Von Goethe (1749-1832)

Outcomes After CABG

Data from CMS (1997-2001)
Total # of Patients = 591139: Black = 591139 White = 591139

	Black Men	Black Women
Mortality by 30 days or in hospital	↑↑	↑
Mortality by 90 days	↑↑	↑
Mortality by 360 days	↑↑↑	↑↑
Revascularization by 30 days	↑	-
Revascularization by 90 days	↑	-
Revascularization by 365 days	-	-

Circulation 2005 111;1210-1216

Characteristics in CABG Patients

	Black	White
Age	↑	–
Females	↑	–
Emergency Room Admissions	↑	–
Emergent/Urgent Admissions	↑	–
Elective Admissions	–	↑
Cath/PCI/CABG o Day of Admission	↑	–
Primary Diagnosis of AMI	↑	–
Previous History of AMI	↑	–
Previous History of PCI/CABG	–	↑
HTN/Diabetes/CHG	↑	–
Chronic Renal Failure/PVD/CVD	↑	–
COPD	–	↑

Circulation 2005 111;1210-1216

Baseline Characteristics of Patients in TACTICS TIMI 18

Total # of Patients = 2183: Non-White = 461

Variable	White	Non-White
Age	Older	Younger
Sex	↓ Female	↑ Female
Hypertension/Diabetes/↑ Lipids	↓	↑
ST Segment Depression	↑	↓
Renal Insufficiency	↓	↑
CRP	↓	↑
Troponin T	–	–

Circulation 2005 111;1217-1224

Baseline Characteristics of Patients in CRUSADE

Total # of Patients = 43317: Blacks = 5504

Variable	White	Non-White
Age	Older	Younger
Sex	↓	↑
Hypertension/Diabetes/Smoking	↓	↑
ST Segment Depression	↑	↓
Hypercholesterolemia	↑	↓
Insurance/Private	↑	↓
Medicare/Medicaid	↓	↑

Circulation 2005 111;1225-1232

In Hospital Procedure / CRUSADE

Variable	White	Black
Cardiac Catheterization (irrespective of level of risk)	↑	↓
PCI (irrespective of level of risk)	↑	↓
CABG (irrespective of level of risk)	↑	↓

Circulation 2005 111;1225-1232

Prevalence of Risk Factors

Variable	White		Black		Mexican Americans	
	<HS	≥HS	<HS	≥HS	<HS	≥HS
Smoking	37.5	21.4	33.0	22.0	14.6	17.7
No Physical Activity	42.4	19.7	46.8	28.9	49.4	29.1
Diabetes	12.6	6.4	17.1	10.4	10.3	6.0
Obesity	32.8	28.5	37.2	38.4	29.5	31.0
↑ Waist Circumference	56.8	46.4	51.9	49.8	42.3	43.9
Hypertension	43.5	30.6	48.7	34.7	22.6	16.0
Total Cholesterol ≥ 200 mg/dL	51.4	50.8	41.9	42.2	44.4	41.7
Low HDL	48.0	37.4	30.4	33.0	41.1	36.2
High HDL	41.9	44.4	31.9	27.5	38.8	41.0
High Triglycerides	38.7	34.4	15.4	10.4	40.7	35.2

Circulation 2005 111;1233-1241

Influence of Racial Disparities

Baseline Characteristics

Variable	White	Black
Age	↑	↓
Female	↓	↑
BMI	↓	↑
CHF	↓	↑
HTN/Diabetes/ ↑ Lipids	↓	↑
ESRD	↓	↑
Ejection Fraction	↑	↓

Circulation 2005 111;1284-1290

Influence of Racial Disparities on Functional Outcomes

Black patients had significantly worse outcomes in physical functioning, general health, mental and emotional health, as well as, angina frequency scale.

Circulation 2005 111;1278-1290

Creighton Medical Center

THE CARDIAC CENTER

Sex and Racial Differences NRMI Data

598,911 patients from 1994-2002

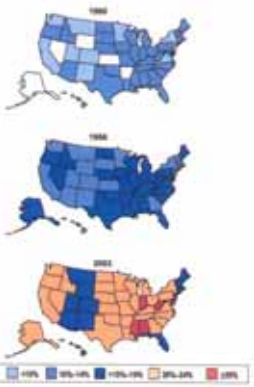
	White Men	White Women	Black Men	Black Women
Rate of Reperfusion Therapy	86.5	83.3	80.4	77.8
Rate of Use of Aspirin	84.4	78.7	83.7	78.4
Rate of Use of Beta Blockers	66.6	62.9	67.8	64.5
Rate of Coronary Angiography	69.1	55.9	64.0	55.0
In Hospital Mortality	–	–	–	↑

NEJM 2005 353;671-682

Trends in the Quality of Care and Racial Disparities in Medicare Managed Care Results 1997-2003

HEDIS Measure	White	Black	Disparity
Breast Cancer Screening	↑	↑	↓
Diabetes Care			
Eye Examination	↑	↑	↓
Testing HG A1C levels	↑	↑	↓
Control of GL A1C levels	↑	↓	↑
Testing of LDL levels	↑	↑	↓
Control of LDL levels	↑	↑	↓
Cardiovascular			
Beta Blocker use after MI	↑	↑	↓
Testing of LDL levels	↑	↑	↓
Control of LDL levels	↑	↓	↑

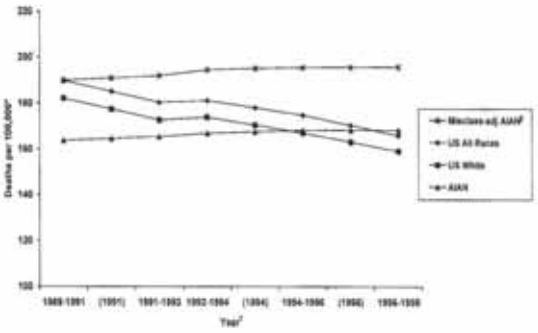
NEJM 2005 353;692-700



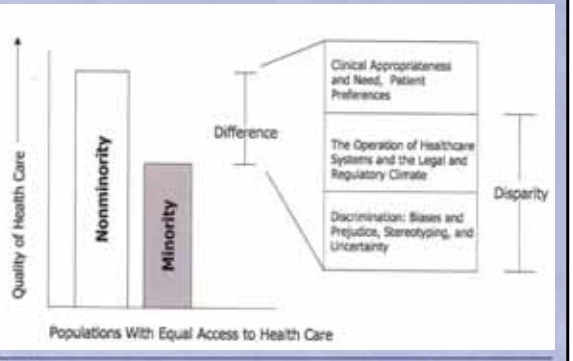
Mensah G, *Circulation* 2005 111;1233-1241

Poverty Status*	Age-Adjusted Percentage, %			
	Reported Heart Disease†	Reported Coronary Heart Disease‡	Reported Hypertension	Reported Stroke
Poor	14.0 ± 0.7	9.4 ± 0.6	26.1 ± 0.8	4.1 ± 0.4
Near poor	12.4 ± 0.5	7.5 ± 0.4	23.1 ± 0.7	3.6 ± 0.3
Not poor	11.4 ± 0.3	6.3 ± 0.2	20.6 ± 0.3	2.2 ± 0.2

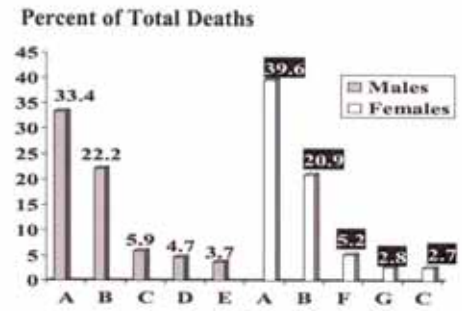
Mensah G, *Circulation* 2005 111;1233-1241



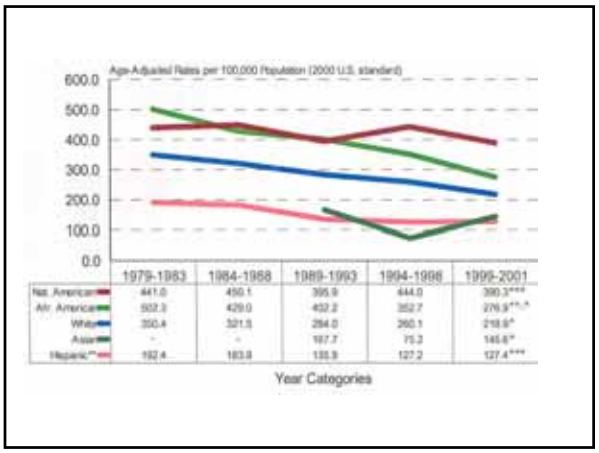
Rhoades D, *Circulation* 2005 111;1250-1258

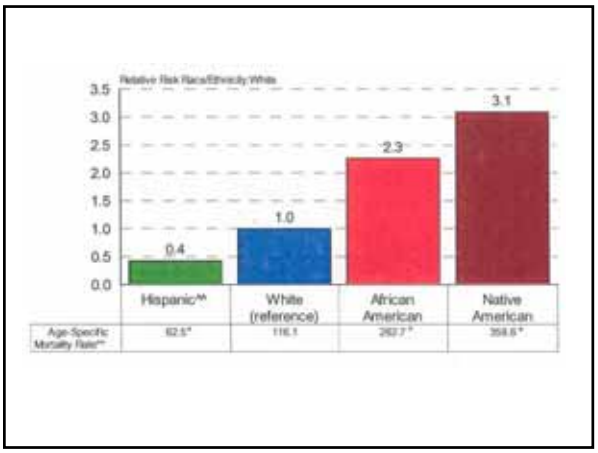


Circulation 2005 111;1339-1349



Circulation 2005 111;1339-1349


Age-Adjusted Rates per 100,000 Population (2000 U.S. standard)
600.0
500.0
400.0
300.0
200.0
100.0
0.0
1979-1983
1984-1988
1989-1993
1994-1998
1999-2001
Nat. American
Afr. American
White
Asian
Hispanic**
441.0
450.1
395.9
444.0
390.3***
552.3
429.0
432.2
352.7
276.9**,^
350.4
321.5
284.0
260.1
218.6*
192.4
183.8
135.9
127.2
127.4***
Year Categories


Relative Risk Race/Ethnicity White
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
0.4
1.0
2.3
3.1
Hispanic^^
White (reference)
African American
Native American
Age-Specific Mortality Rate**
62.5*
116.1
262.7*
358.6*

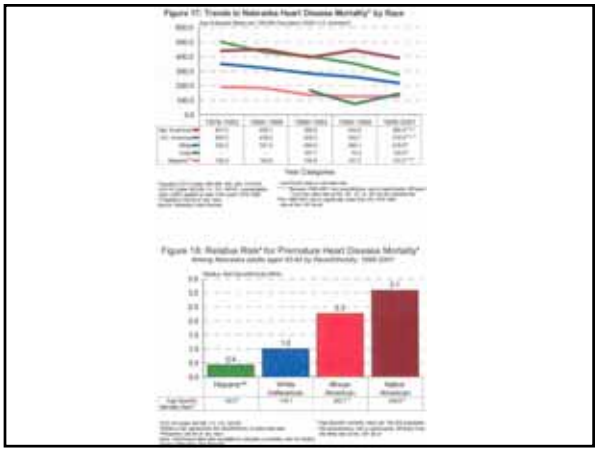
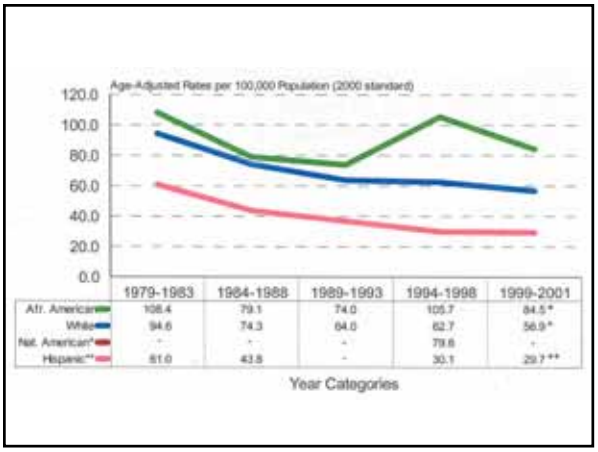
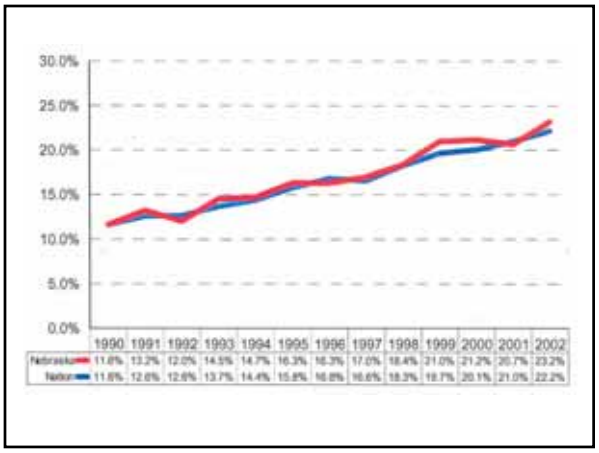
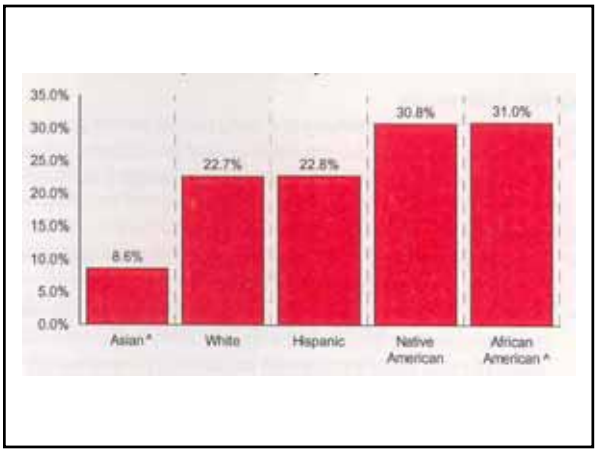
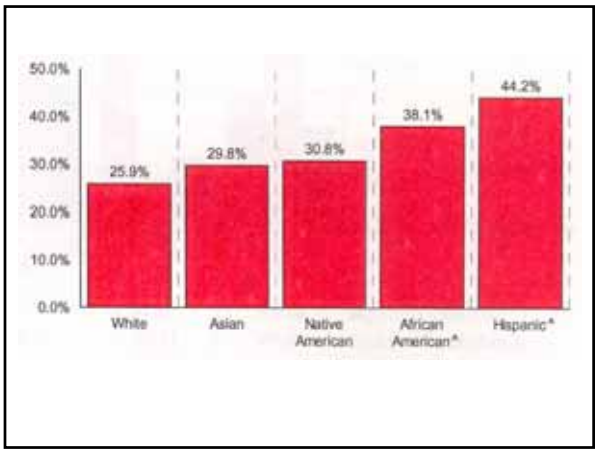


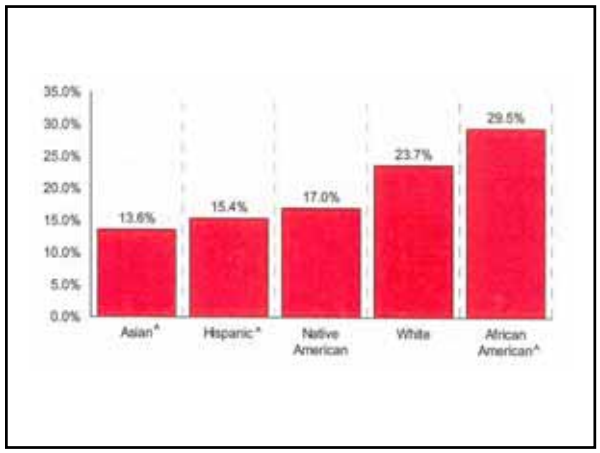
Figure 17: Trends in Nebraska Heart Disease Mortality* by Race
Figure 18: Relative Risk* for Premature Heart Disease Mortality*

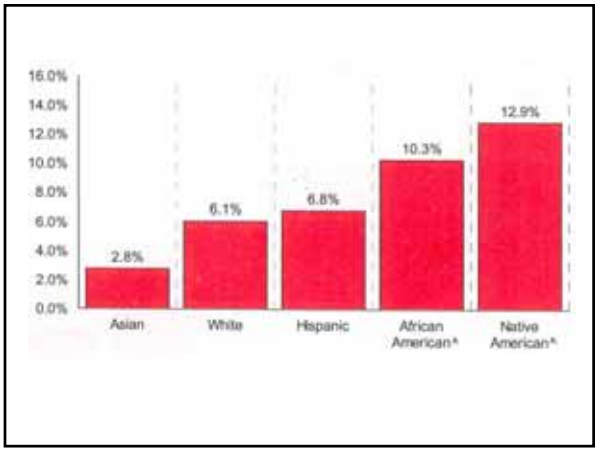

Age-Adjusted Rates per 100,000 Population (2000 standard)
120.0
100.0
80.0
60.0
40.0
20.0
0.0
1979-1983
1984-1988
1989-1993
1994-1998
1999-2001
Afr. American
White
Nat. American*
Hispanic**
108.4
79.1
74.0
105.7
84.5*
94.6
74.3
64.0
62.7
56.9*
-
-
-
78.6
-
61.0
43.8
-
30.1
29.7**
Year Categories

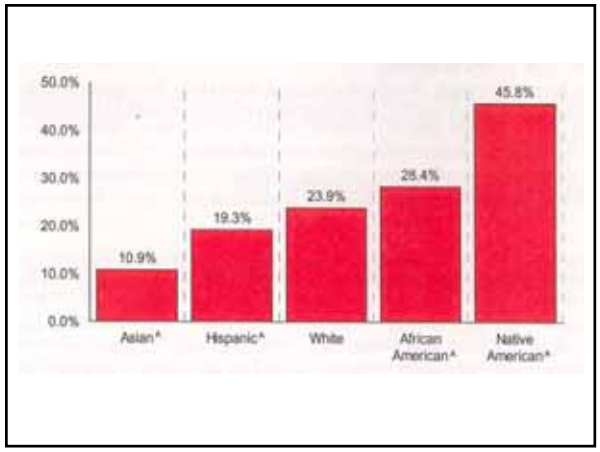

30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002
Nebraska
Nation
11.6% 13.2% 12.0% 14.5% 14.7% 16.3% 16.3% 17.0% 18.4% 21.0% 21.2% 20.7% 23.2%
11.6% 12.6% 12.6% 13.7% 14.4% 15.8% 16.8% 16.6% 18.3% 19.7% 20.1% 21.0% 22.2%

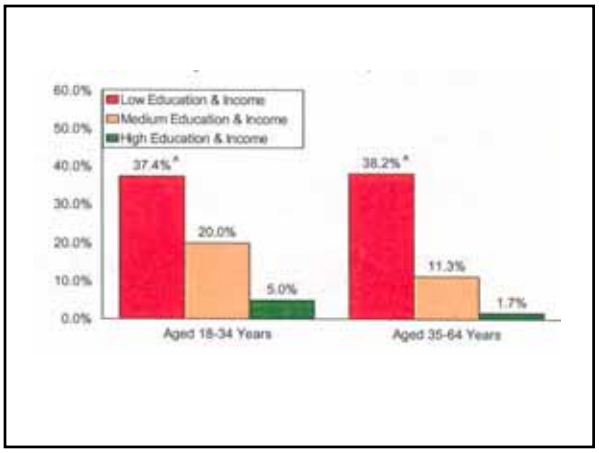

35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
8.6%
22.7%
22.8%
30.8%
31.0%
Asian^
White
Hispanic
Native American
African American^

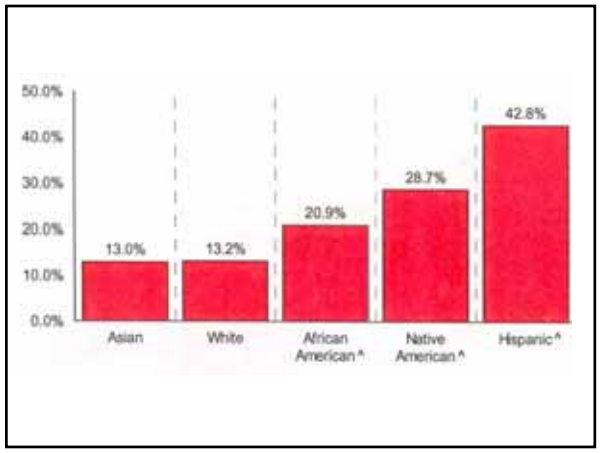

50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
25.9%
29.8%
30.8%
38.1%
44.2%
White
Asian
Native American
African American^
Hispanic^

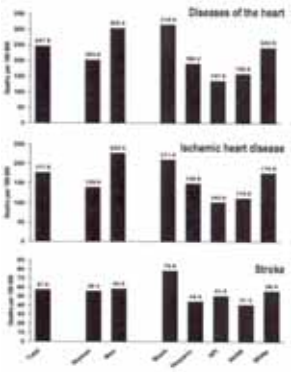

35.0%
30.0%
25.0%
20.0%
15.0%
10.0%
5.0%
0.0%
13.6%
15.4%
17.0%
23.7%
29.5%
Asian^
Hispanic^
Native American
White
African American^


16.0%
14.0%
12.0%
10.0%
8.0%
6.0%
4.0%
2.0%
0.0%
2.8%
6.1%
6.8%
10.3%
12.9%
Asian
White
Hispanic
African American^
Native American^


50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
10.9%
19.3%
23.9%
28.4%
45.8%
Asian^
Hispanic^
White
African American^
Native American^


60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
Low Education & Income
Medium Education & Income
High Education & Income
37.4%^
20.0%
5.0%
38.2%^
11.3%
1.7%
Aged 18-34 Years
Aged 35-64 Years


50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
13.0%
13.2%
20.9%
28.7%
42.8%
Asian
White
African American^
Native American^
Hispanic^



Mensah G, *Circulation* 2005 111;1233-1241